Haochen Wang

+1 213-447-9975
hcwang96@mit.edu
hcwang.academicwebsite.com

Education

Ph.D. in Physics, Massachusetts Institute of Technology (MIT) 2019 – present
Advisor: Kiyoshi Masui

B.S. in Astronomy/Math, Minor in Music, University of Southern California (USC) 2015 – 2019
Salutatorian of Class of 2019

Research Positions

Graduate Research Assistant, MIT Synoptic Radio Lab 2019 – present
Advisor: Kiyoshi Masui

Undergraduate Research Assistant, NANOGrav Pulsar Timing Array 2018 – 2019
Advisor: Michele Vallisneri

Undergraduate Research Assistant, USC Solar Physics Group 2015 – 2019
Advisor: Edward Rhodes

Collaboration Membership

Canadian Hydrogen Intensity Mapping Experiment (CHIME) Collaboration 2019 – present

CHIME/Fast Radio Burst (FRB) Collaboration 2024 – present

Honors and Awards

School of Science DEI Service Fellowship, MIT 2024
Emerson/Harris Scholarship, MIT 2021, 2022, 2023, 2024
MIT Physics Whiteman Graduate Fellowships, MIT 2019, 2020
Salutatorian of Class of 2019, USC 2019
Renaissance Scholar Award, USC 2019
Trustee Award, USC 2019
Black Alumni Association Scholarship, USC 2016, 2017, 2018
Morning Light Foundation Scholarship 2016, 2017, 2018

Mentoring and Advising

Shion Andrew, MIT Physics graduate student project 2023 – present
Project: "Linear Filter for Radio Frequency Interference Mitigation"

April Cheng, MIT Undergraduate Research Opportunities Program (UROP) 2023 – present
Project: "Exploring selection biases in FRB dispersion–galaxy cross-correlations"

Panupong (Pitt) Phoompuang, MIT UROP 2022 – present
Project: "Applying Hybrid Foreground Residual Subtraction to the CHIME Simulation Pipeline"

Teaching Positions

Teaching Assistant, MIT

8.962 Graduate General Relativity	Spring 2022 and 2024
8.942 Graduate Cosmology	Fall 2022 and 2024
8.033 Undergraduate Relativity	Fall 2021 and 2022

Course Instructor, MIT Introduction to Technology, Engineering, and Science (MITES)

Astrophysics Project Course	Summer 2021, 2022, and 2023

Leadership and Service

FRB Session Organizer, the 33rd Texas Symposium on Relativistic Astrophysics	2025
Member, MIT Graduate Students Advising Graduate Admissions Committee	2022 – 2025
President, MIT Physics Graduate Student Council (PGSC)	2022 – 2023
Chair, MIT Ashdown House Communities Committee	2022 – 2023
Organizer, MIT Astrophysics Journal Club	2021 – 2023
Arts Officer, MIT Ashdown House Communities Committee	2021 – 2022
Volunteer, USC Black Alumni Association	2016 – 2019

Public Engagement and Science Communication

Co-organizer and Lead Observer, MIT Sidewalk Astrogazer Club	2023 – present
Volunteer, Cambridge Science Festival	Oct. 2023, Sep. 2024
Volunteer, MIT Museum After Dark	May 2023
Volunteer, Boston Astronomy on Tap	2023 – 2024

Professional Development Activities

Panelist, MIT Physics Graduate Student Open House	Apr. 2022, Mar. 2023
Panelist, MIT Physics Graduate Student Admissions Webinar	Nov. 2022, Nov. 2023, Oct. 2024
Editor, MIT Physics Graduate Student Handbook	2022, 2023

Peer Review Service

Physical Review D	2023 – present
Physical Review Letters	2025 – present
The Astrophysical Journal	2024 – present
The Astrophysical Journal Letters	2025 – present

Seminars & Conference Presentations

Invited talk, Observers Group Seminar, Northwestern University	Oct. 2025
Invited talk, Journal Club, University of Pennsylvania	Oct. 2025
Invited talk, Cosmology Seminar, Yale University	Sep. 2025
Invited talk, Cosmo-ph Seminar, McGill University	Nov. 2024
Invited talk, Astronomy Tea Talk, California Institute of Technology	Oct. 2024
Invited talk, Cosmology Seminar, Arizona State University	Oct. 2024
Invited talk, Astronomy Lunch Talk, University of California, Berkeley	Oct. 2024
Contributed talk, Line Intensity Mapping 2024 Meeting	Jun. 2024
Contributed talk, American Physical Society April Meeting	Apr. 2022
Contributed talk, Summer All Zoom Epoch of Reionisaton Astronomy Conference	Mar. 2022
Poster presentation, USC Undergraduate Research Symposium Presentation	Apr. 2019

Publications

Lead-author Papers

H. Wang, P. Phoompuang [1], K. Masui et al. (2025) — Submitted to Phys. Rev. D
Mitigating antenna gain errors with HyFoReS in CHIME simulations — arXiv:2506.09170

H. Wang, K. Masui, S. Andrew et al. (2025) — Submitted to Phys. Rev. Lett.
Measurement of the dispersion–galaxy cross-power spectrum with the second CHIME/FRB catalog — arXiv:2506.08932

H. Wang, K. Masui, K. Bandura et al (2025). — Phys. Rev. D **111**
Demonstration of hybrid foreground removal on CHIME data — arXiv:2408.08949

H. Wang, J. Mena-Parra, T. Chen, and K. Masui (2022) — Phys. Rev. D **106**
Removing systematics-induced 21-cm foreground residuals by cross-correlating filtered data — arXiv:2203.07184

H. Wang, S. Taylor, and M. Vallisneri (2019) — M.N.R.A.S. **487**
Bayesian cross validation for gravitational-wave searches in pulsar-timing array data — arXiv:1904.05355

A. Cheng [2], S. Andrew, **H. Wang**, and K. Masui (2025) — Submitted to Astrophys. J.
Exploring selection biases in FRB dispersion-galaxy cross-correlations with magnetohydrodynamical simulations — arXiv:2506.03258

Co-author Papers

A. Lanman, S. Simha, K. Masui et al. (including **H. Wang**) (2025) — Submitted to Astrophys. J.
Constraining baryon fractions in galaxy groups and clusters with the first CHIME/FRB outrigger — arXiv:2509.07097

C. Leung, S. Simha, I. Medlock et al. (including **H. Wang**) (2025) — Submitted to Astrophys. J. Lett.
Stellar mass-dispersion measure correlations constrain baryonic feedback in fast radio burst host galaxies — arXiv:2507.16816

CHIME/FRB Collaboration (including **H. Wang**) (2025) — Astrophys. J. Lett. **989**
FRB 20250316A: a brilliant and nearby one-off fast radio burst localized to 13 parsec precision — arXiv:2506.19006

CHIME Collaboration (including **H. Wang**) (2025) — Submitted to Astrophys. J. Lett.
Discovery of an HI 21 cm absorption system at z=2.327 with CHIME — arXiv:2506.11269

CHIME/FRB Collaboration (including **H. Wang**) (2025) — Submitted to Astrophys. J.
CHIME/FRB outriggers: design overview — arXiv:2504.05192

CHIME/FRB Collaboration (including **H. Wang**) (2025) — Astrophys. J. S. **280**
A catalog of local universe fast radio bursts from CHIME/FRB and the KKO outrigger — arXiv:2502.11217

[1] Undergraduate student under my supervision
[2] Undergraduate student under my co-supervision

S. Andrew, C. Leung, A. Li et al. (including **H. Wang**) (2025) Astrophys. J. **981**
A very long baseline interferometry calibrator grid at 600 MHz for fast radio transient localizations with CHIME/FRB outriggers arXiv:2409.11476

CHIME Collaboration (including **H. Wang**) (2024) Astrophys. J. **976**
Holographic beam measurements of the Canadian Hydrogen Intensity Mapping Experiment (CHIME) arXiv:2408.00172

CHIME and GMIMS Collaborations (including **H. Wang**) (2024) Astrophys. J. **971**
Faraday tomography with CHIME: the 'tadpole' feature G137+7 arXiv:2405.15678

CHIME/FRB Collaboration (including **H. Wang**) (2024) Astrophys. J. **969**
Updating the first CHIME/FRB catalog of fast radio bursts with baseband data arXiv:2311.00111

CHIME Collaboration (including **H. Wang**) (2024) Astrophys. J. **963**
A detection of cosmological 21 cm emission from CHIME in cross-correlation with eBOSS measurements of the Lyman-α forest arXiv:2309.04404

CHIME/FRB Collaboration (including **H. Wang**) (2023) Astrophys. J. **947**
CHIME/FRB discovery of 25 repeating fast radio burst sources arXiv:2301.08762

CHIME Collaboration (including **H. Wang**) (2023) Astrophys. J. **947**
Detection of cosmological 21 cm emission with the Canadian Hydrogen Intensity Mapping Experiment arXiv:2202.01242

CHIME Collaboration (including **H. Wang**) (2022) Astrophys. J. **923**
Using the Sun to measure the primary beam response of the Canadian Hydrogen Intensity Mapping Experiment arXiv:2201.11822

CHIME Collaboration (including **H. Wang**) (2022) Astrophys. J. S. **261**
An overview of CHIME, the Canadian Hydrogen Intensity Mapping Experiment arXiv:2201.07869

CHIME/FRB Collaboration (including **H. Wang**) (2021) Astrophys. J. S. **257**
The First CHIME/FRB Fast Radio Burst Catalog arXiv:2106.04352

CHIME/Pulsar Collaboration (including **H. Wang**) (2021) Astrophys. J. S. **255**
The CHIME Pulsar Project: system overview arXiv:2008.05681

CHIME/FRB Collaboration (including **H. Wang**) (2020) Nature **587**
A bright millisecond-duration radio burst from a Galactic magnetar arXiv:2005.10324

CHIME/FRB Collaboration (including **H. Wang**) (2020) Nature **582**
Periodic activity from a fast radio burst source arXiv:2001.10275